

**IMC Chemicals**

October 22, 2003
Corrected October 28, 2003

IMC Chemicals Inc.

P.O. Box 367

Trona, California 93592-0367

Dr. Kai Dunn
California Regional Water Quality
Control Board, Lahontan Region
15428 Civic Drive, Suite 100
Victorville, CA 92392-2359

Re: ACL Order R6V-2002-0025, Item 3.D. Peer Review Reports

Dear Dr. Dunn:

This report addresses Item 3.D. of the California Regional Water Quality Control Board's Administrative Civil Liability Order No. R6V-2002-0025. Item 3.D. of the ACL Order required IMC Chemicals (IMCC) to arrange for and fund a peer review of reports submitted to the Regional Board regarding analytical test methods and process/source control alternatives for the Trona Plant.

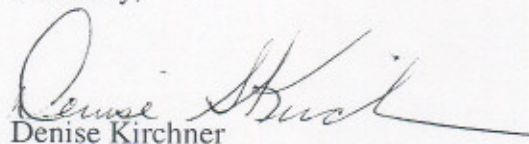
IMCC contacted Mr. Cornelius Berthold to review the boric acid process alternative study. The two documents listed below were sent to Mr. Berthold on May 17, 2002 for his review.

- Process and Source Control Alternative Study: Detailed Alternatives Evaluation for IMCC Trona Plant, Volumes I through III, Kennedy/Jenks Consultants, July 19, 2001
- Response to Conditional Concurrence with Process and Source Control Alternatives Study – Preliminary Technology Evaluation and Screening for IMCC Trona Plant, IMC Chemicals, Trona, San Bernardino, County (Board Order Nos. WDID 6B368020001 – Trona), Kennedy/Jenks Consultants, March 18, 2002.

Mr. Berthold returned his comments to IMCC in a letter dated October 3, 2003. A copy of Mr. Berthold's letter is enclosed. IMCC believes this closes the peer review process.

Please contact me if you have any questions. I can be reached by telephone at (760) 372-2118 or by e-mail at kirchner@nachem.com.

Sincerely,



Denise Kirchner

Enclosure

Copy to: Distribution Sheet Attached

Distribution Sheet:

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X Jim Jackson
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X Rod Jensen
X Book
X File

C.E. BERTHOLD

CONSULTING CHEMICAL ENGINEER

October 3, 2003

Mr. Jim Fairchild
IMC Chemicals
P. O. Box 367
Trona, CA 93592-0367

Dear Sir:

This letter will serve to present my opinions and conclusions regarding the borate chemicals production options that are possible at the Trona plant of IMC Chemicals in California.

The very thorough study prepared by IMC Chemicals and Kennedy-Jenks Consultants outlines the various options available for producing boron chemicals, particularly boric acid, that would maintain IMC Chemicals' position as a significant boron chemicals producer in the United States.

Solvent extraction, as presently practiced by IMC Chemicals at the Trona plant, is a very selective method for recovering borate values from an alkaline brine. However, the environmental problems currently experienced make such a process route only marginally economic. Also, the hazards to waterfowl occasioned by solar pond disposal of organic contaminated waste brine are of significant concern.

Solar evaporation of Searles Lake brine, to circumvent the energy-intensive and very costly steam evaporation system practiced at Trona for many decades, has been studied and evaluated by the writer and numerous others in the late 1960s. This would produce a salt mixture suitable for hot brine leaching to produce a concentrated potassium chloride-borax solution that could be fractionally crystallized.

The economics of this concept were marginal at best, offering a very low return on investment.

Also, the thousands of acres of solar evaporation ponds required, particularly if lined with an impermeable liner, would drastically increase the capital cost over what was estimated in the studies of the late 1960s.

The impact of such large acreages of solar ponds on waterfowl would be sizeable and probably cause numerous bird deaths, so this option, in my opinion, is not a viable option for consideration at Trona.

Surface mining of crude borax solid is also not a viable option, since reserves are very limited and also would occasion the use of high-cost mining and chemical purification operations.

Mr. Jim Fairchild
October 3, 2003
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In my opinion, giving consideration to the demonstrated technology presently practiced at Searles Lake, the use of thermally enhanced leaching of the Searles Lake salt body to produce a much more concentrated borate-containing brine for processing by the existing brine carbonation-crystallization system is the only economically viable option for IMC Chemicals to maintain its borate production capability at Trona.

In addition, the additional borax produced can be converted, at lower cost than the BAX plant, into high-quality boric acid. Such acidification of borax ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) with sulfuric acid has been practiced previously, both at the Trona and Westend plants of IMC Chemicals, and is a proven process route.

In summary, it is the writer's opinion that warm brine leaching of in-situ sodium tetraborate decahydrate to produce a much-enriched borate level is the feasible and economically attractive route to follow. This process route is presently practiced in both the Argus and Westend plants and is a verified and cost-effective route to both increased borate and boric acid productions.

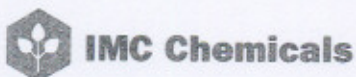
Please advise if more detail is needed or if supporting information is required.

Very truly yours,



C. E. Berthold
Calif. P.E. No. MT 796

CEB:wlk



October 22, 2003

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Trona, California 93592-0367

Dr. Kai Dunn
California Regional Water Quality
Control Board, Lahontan Region
15428 Civic Drive, Suite 100
Victorville, CA 92392-2359

Re: ACL Order R6V-2002-0025, Item 3.E. ACE Water Recycling

Dear Dr. Dunn:

This report addresses Item 3.D. of the California Regional Water Quality Control Board's Administrative Civil Liability Order No. R6V-2002-0025. Item 3.D. of the ACL Order required IMC Chemicals (IMCC) to arrange for and fund a peer review of reports submitted to the Regional Board regarding analytical test methods and process/source control alternatives for the Trona Plant.

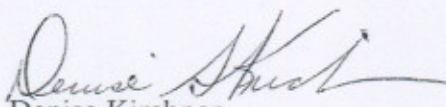
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Sincerely,


Denise Kirchner

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